MATERIAL AND METHODS
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The parameters of age (years), sex, height (cm), weight (kg), serum creatinine (mg%) and 24 hour urinary creatinine production (mg/kg/24 hour) were measured in 28 consecutive spinal cord injury patients (15 male, 13 female, 12 quadriplegics and 16 paraplegics) admitted to Orthopaedic wards of M.L.B. Medical College, Hospital, Jhansi.

Serum and urinary creatinine levels were quantitated by Jaffe Method without deproteinization. All of the subjects had stable renal function at the time of inclusion of case into the study.

The creatinine production of these patients was compared to age and sex matched neurologically intact hospitalized patients reported by Kampmann & Associates. The difference in creatinine production was analysed for statistical significance by the unpaired student t' test.

The various factors that might influence the 24 hour urinary creatinine production in spinal cord injury patients were examined sequentially. Quadriplegics were compared to paraplegics and male to female by unpaired student t'test. The effects of age upon creatinine production were examined by regression analysis.
METHOD

JAFFE METHOD WITHOUT DEPROTEINIZATION:

2 point reaction rate measurement in 2 minutes
(Bartels H. et al, 1971).

Test Principle:

Creatinine forms a coloured complex with picrate in alkaline medium. The rate of formation of the complex is measured.

Sample Material:

Serum, heparinized plasma, urine.

Reagents:

<table>
<thead>
<tr>
<th>Sl. No.</th>
<th>Contents</th>
<th>Initial concentration of solutions</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Standard (Creatinine)</td>
<td>2 mg/100 ml (177 micromol/lit.)</td>
</tr>
<tr>
<td>2.</td>
<td>Picric Acid</td>
<td>35 m mol/ lit.</td>
</tr>
<tr>
<td>3.</td>
<td>NaOH</td>
<td>0.32 mol/lit.</td>
</tr>
</tbody>
</table>

Preparation and stability of reagents:

1. Used reagents undiluted and stable up to the expiry date specified when stored at + 15 to + 25°C.
2. Diluted 1 part by volume of NaOH with 4 parts by volume of redist. water.

3. Prepared a 1 + 1 mixture of picric acid with diluted NaOH at least 30 minutes before starting the assay.

**Sample Preparation:**

Hemolysis interferes with test. serum or plasma can be stored upto 24 hours at + 4°C.

Dilute fresh urine 1 + 49 with redist. water.

**Procedure:**

Wave length Hg 492 nm (490 - 510 nm)
Spectrophotometer : 490 nm
Curette : 1 cm light path
Temperature : + 25°C

One standard is sufficient for each reagent mixture.

<table>
<thead>
<tr>
<th>Pipette into curette</th>
<th>Standard</th>
<th>Sample</th>
</tr>
</thead>
<tbody>
<tr>
<td>Reagent mixture</td>
<td>2.0 ml</td>
<td>2.0 ml</td>
</tr>
<tr>
<td>Standard solution</td>
<td>0.2 ml</td>
<td>-</td>
</tr>
<tr>
<td>Sample</td>
<td>-</td>
<td>0.2 ml</td>
</tr>
</tbody>
</table>
Mixed and stopwatch is started at the same time. After 30 seconds absorbance A1 is read of standard and sample respectively and exactly 2 minutes later absorbance A2 is read of standard & sample.

\[ A2 - A1 \text{ A sample or A standard} \]

If the creatinine concentration exceeded to 10 mg% in serum/plasma or 500 mg% in urine.

Then the serum, plasma or diluted urine was diluted 1 + 4 with .9% NaCl solution and repeat assay (result x 5).

**Calculation:**

Creatinine concentration (c) in serum or plasma.

\[ C = 2.0 \times \frac{A_{\text{sample}}}{A_{\text{standard}}} \text{ (mg / 100 ml)} \]

Creatinine concentration (c) in urine.

\[ C = 100 \times \frac{A_{\text{sample}}}{A_{\text{standard}}} \text{ (mg / 100 ml)} \]

**CREATININE CLEARANCE:** It can be measured and predicted.

\[ \text{Measured Cr. Cl. (Ml/Min)} = \frac{\text{cGm% in urine}}{\text{cGm% in serum}} \times \frac{\text{Urine volume Ml/24 hour}}{24 \times 60} \]

Nomogram reported by Kampmann and Associates was used to predict creatinine clearance.
"Nomogram for rapid evaluation of endogenous Creatinine clearance"

With a ruler, join weight to age, keep ruler at crossing point of line marked R. Then move the right hand side of the ruler to the appropriate serum creatinine value and read the patients clearance from the left side of the nomogram.